

High Fidelity Down-Conversion Source for Secure Communications using On-Demand Single Photons, Phase II

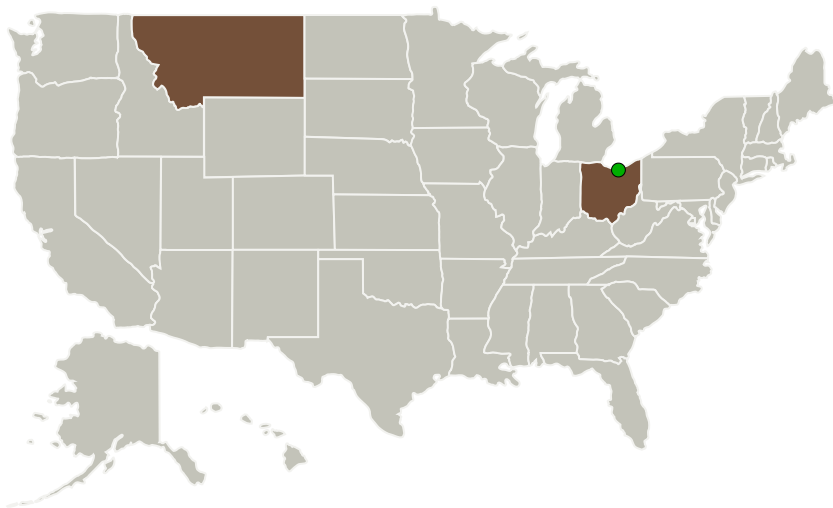
Completed Technology Project (2011 - 2014)




Project Introduction

In this NASA SBIR Phase II effort, AdvR will design and build an efficient, fully integrated, waveguide based, source of spectrally uncorrelated photon pairs that will enable accelerated research and development in the emerging field of quantum information science. The key innovation is the use of sub-micron periodically poled waveguides to produce counter propagating photon pairs using quasi-phase matched downconversion. This novel device will provide a high brightness source of downconversion pairs with enhanced spectral properties, low attenuation, and operation in the visible to the mid-infrared spectral region.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
ADVR, Inc.	Lead Organization	Industry	Bozeman, Montana
 Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

Primary U.S. Work Locations

Montana	Ohio
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Project Transitions



June 2011: Project Start



May 2014: Closed out

Closeout Documentation:

- Final Summary Chart(<https://techport.nasa.gov/file/138915>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

ADVR, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Anthony Roberts

Co-Investigator:

Tony Roberts

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Technology Maturity (TRL)

Start: **3**
Current: **4**
Estimated End: **4**



Technology Areas

Primary:

- TX05 Communications, Navigation, and Orbital Debris Tracking and Characterization Systems
 - └ TX05.1 Optical Communications
 - └ TX05.1.1 Detector Development

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System